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10/695,852

10/29/2003

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11/10/2005

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EXAMINER

IWASHKO, LEV

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/695,852

Applicant(s)

MATSUMOTO ET AL.

Examiner

Lev I. Iwashko

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/29/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following are quotations of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Melchior (US Patent 6,226,710)

Claim 1. A content-addressable memory comprising:

- a storage section having a plurality of storage areas (*Column 11, lines 11-13 – State that RAM may be partitioned into 8096 independent CAM tables*)
- for storing therein a plurality of pieces of information, (*Column 11, line 19 – State that the tables store keys and associations*)
- the storage areas having respective priority ranks assigned thereto; (*Column 12, lines 48-50 – State that a “configuration is automatically selected to minimize the number of key words that need to be read for a seek”. In other words, they are ranked in priority*)
- an ancillary storage section having a plurality of ancillary storage areas for storing therein the priority ranks, the plurality of ancillary storage areas being associated with the plurality of storage areas, respectively; (*Column 13, lines 42-46 – State that “configuration data” (a.k.a. priority ranks) is kept in “registers” (a.k.a. ancillary storage)*)
- and a controlling section for outputting, when at least one of the storage areas stores therein information matching with a word supplied from an exterior, pointer(s) of all or part of the at least one of the storage areas in descending order of priority ranks that are stored in

ancillary storage area(s) associated with the at least one of the storage areas. *(Column 16, lines 16-20 – State that the “CAM engine” (a.k.a. controlling section for outputting) will output its configuration word to the data bus and will sequentially output its RAM word within the range of the configuration. Column 13, lines 42-46 – State that “configuration data” (a.k.a. priority ranks) is kept in “registers” (a.k.a. ancillary storage))*

Claim 2. The content-addressable memory according to claim 1, further comprising a priority setting section for creating sequential priority ranks in order in which the plurality of pieces of information are stored in the plurality of storage areas, and for storing the created priority ranks in ancillary storage areas associated with the storage areas, respectively. *(Column 16, lines 16-20 – State that the “CAM engine” will output its configuration word to the data bus and will sequentially output its RAM word within the range of the configuration. Column 13, lines 42-46 – State that “configuration data” (a.k.a. priority ranks) is kept in “registers” (a.k.a. ancillary storage))*

Claim 3. The content-addressable memory according to claim 1, wherein the storage section is supplied in serial *(Figure 2, Diagram 108 – Shows that the storage section is supplied in serial)*

- with the plurality of pieces of information from an exterior, and stores the supplied pieces of information in the plurality of storage areas in sequence. *(Column 16, lines 16-20 – State that the “CAM engine” (a.k.a. controlling section for outputting) will output its configuration word to the data bus and will sequentially output its RAM word within the range of the configuration)*

Claim 4. The content-addressable memory according to claim 1, wherein the ancillary storage section is supplied in serial with the priority ranks assigned to the storage areas, and stores the supplied priority ranks in the plurality of ancillary storage areas in sequence. *(Column 16, lines 27-33 – State that the configuration will match exactly to the configuration of the*

table previously unloaded, and the CAM engine will store the each word passed in the load in consecutive words of the current table)

Claim 5. The content-addressable memory according to claim 1, further comprising a priority converting section for converting the priority ranks stored in the ancillary storage areas into unique priority ranks (*Column 14, lines 24-31 – Describe the process of the “set context to existing table”. This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)*

- indicating an order in which the plurality of pieces of information are to match with a common word supplied from an exterior. (*Column 13, lines 46-49 – State that “the configuration data for the remaining tables are kept in the off-chip memory”, which means that there is an exterior from which common words are supplied)*)

Claim 6. The content-addressable memory according to claim 3, further comprising a priority converting section for converting the priority ranks stored in the ancillary storage areas into unique priority ranks (*Column 14, lines 24-31 – Describe the process of the “set context to existing table”. This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)*

- indicating an order in which the plurality of pieces of information are to match with a common word supplied from an exterior. (*Column 13, lines 46-49 – State that “the configuration data for the remaining tables are kept in the off-chip memory”, which means that there is an exterior from which common words are supplied)*)

Claim 7. The content-addressable memory according to claim 4, further comprising a priority converting section for converting the priority ranks stored in the ancillary storage areas into unique priority ranks (*Column 14, lines 24-31 – Describe the process of the “set context to existing table”. This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)*

- indicating an order in which the plurality of pieces of information are to match with a common word supplied from an exterior. *(Column 13, lines 46-49 – State that “the configuration data for the remaining tables are kept in the off-chip memory”, which means that there is an exterior from which common words are supplied)*

Claim 8. The content-addressable memory according to claim 5, wherein:

- each of the priority ranks contains ancillary control information indicating a condition to be satisfied between the stored information in the plurality of storage areas and pointers of the storage areas; *(Column 15, lines 40-49 – State that the CAM engine checks for a match between the key presented and the stored key, and there is a segment base address involved)*
- and the priority converting section converts each of the priority ranks stored in the ancillary storage areas into a priority rank which satisfies the condition contained in the ancillary control information. *(Column 14, lines 24-31 – Describe the process of the “set context to existing table”. This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)*

Claim 9. The content-addressable memory according to claim 6, wherein:

- each of the priority ranks contains ancillary control information indicating a condition to be satisfied between the stored information in the plurality of storage areas and pointers of the storage areas; *(Column 15, lines 40-49 – State that the CAM engine checks for a match between the key presented and the stored key, and there is a segment base address involved)*
- and the priority converting section converts each of the priority ranks stored in the ancillary storage areas into a priority rank which satisfies the condition contained in the ancillary control information. *(Column 14, lines 24-31 – Describe the process of the “set context to existing*

table". This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)

- Claim 10. The content-addressable memory according to claim 7, wherein:
- each of the priority ranks contains ancillary control information indicating a condition to be satisfied between the stored information in the plurality of storage areas and pointers of the storage areas; *(Column 15, lines 40-49 – State that the CAM engine checks for a match between the key presented and the stored key, and there is a segment base address involved)*
 - and the priority converting section converts each of the priority ranks stored in the ancillary storage areas into a priority rank which satisfies the condition contained in the ancillary control information. *(Column 14, lines 24-31 – Describe the process of the "set context to existing table". This process identifies the RAM table that has context, and also changes the context to perform record operations on a different table)*
- Claim 11. The content-addressable memory according to claim 1, wherein the plurality of storage areas and the plurality of ancillary storage areas are a set of common storage areas in each of which a single piece of information and a priority rank are stored in a pack, *(Figure 3 – Shows that the RAM indeed is partitioned into common storage areas with packs of information)*
- the single piece of information and the priority rank being associated with each other. *(Column 16, lines 16-20 – State that the "CAM engine" will output its configuration word to the data bus and will sequentially output its RAM word within the range of the configuration. In other words, there is association between the info and the priority rank)*

- Claim 12. The content-addressable memory according to claim 11, wherein each of the common storage areas is a set of partial storage areas to which data is written individually. *(Figure 3 – Demonstrates the set of partial storage areas to which data is written individually)*
- Claim 13. The content-addressable memory according to claim 1, wherein:
- control information is appended to each of the priority ranks stored in the plurality of ancillary storage areas, the control information indicating a processing which the controlling section is to perform; *(Column 16, lines 63-67 – States that “the RAM control function provides RAM read and write services for all other CAM engine processes”)*
 - and the controlling section determines which one of the ancillary storage areas is associated with one of the storage areas which stores therein information matching with the word supplied from an exterior, *(Column 16, lines 27-33 – State that the CAM engine will store the each word passed in the load in consecutive words of the current table. Column 13, lines 46-49 – State that “the configuration data for the remaining tables are kept in the off-chip memory”, which means that there is an exterior from which common words are supplied)*
 - and performs a processing indicated by control information which is stored in the determined ancillary storage area. *(Column 16, lines 63-67 – States that “the RAM control function provides RAM read and write services for all other CAM engine processes”)*
- Claim 14. The content-addressable memory according to claim 13, wherein the control information contains at least one of a criterion, the number of pointers to be output, and a type of the pointers, *(Column 12, lines 52-59 – State that the CAM engine receives a “configure new table” command from the host, and there is an associated 32-bit linked association pointer)*
- the criterion being for judging whether the stored information in the plurality of storage areas match with the word supplied from the

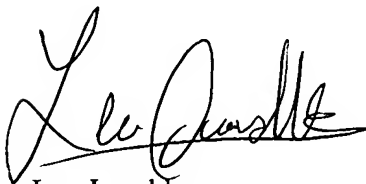
exterior. (Column 16, lines 16-20 – State that the “CAM engine” (a.k.a. controlling section for outputting) will output its configuration word to the data bus and will sequentially output its RAM word within the range of the configuration. Column 13, lines 42-46 – State that “configuration data” (a.k.a. priority ranks) is kept in “registers” (a.k.a. ancillary storage))

Conclusion


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lev I. Iwashko whose telephone number is (571)272-1658. The examiner can normally be reached on M-F (alternating Fridays), from 8-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Matt Kim can be reached on (571)272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lev Iwashko



MATTHEW D. ANDERSON
PRIMARY EXAMINER